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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,200	12/07/2000	Volker Rasche	PHD 99,179	9483

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EXAMINER

KAO, CHIH CHENG G

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 03/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/732,200

Applicant(s)

RASCHE ET AL.

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet: 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The proposed drawing corrections filed 2/7/2002 have been approved. However, replacement drawing sheet(s) including the corrections have not been received yet and are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1-3, 7, 11, 17, 19, and 20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Krause (US Patent 5901200) in view of Rattner (US Patent 6,213,638) and Jarin et al. (FR 2645007).

3. With regards to claim 1, Krause discloses an x-ray device (Fig. 2) with a source (Fig. 2, #2) and detector (Fig. 1, #3) mounted at different ends of a common holding device (Fig. 2, #4) being connectable to a room by way of a supporting device (Fig. 2, #16-18), such that the supporting device has a first end connected to the common holding device (Fig. 2, end connected to #4) and a second end connectable to the room (Fig. 2, ceiling), wherein the supporting device comprising serially inter-connected supporting members (Fig. 2, #16-18) with a plane hinge (Fig. 2, hinge between #16 and 17), and wherein the second end is connected to a rotational hinge

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(Fig. 2, hinge connecting #16 and ceiling) such that the entire supporting device is rotatable about an axis parallel to the plane defined by the supporting members (Fig. 2, rotation about "B" when #16 and 17 are parallel).

However, Krause does not seem to specifically disclose a plurality of hinges or members individually controlled.

Rattner teaches a plurality of hinges (Fig. 1, #8). Jarin et al. teaches supporting members individually controlled (Fig. 1 and Abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the device of Krause with a plurality of hinges of Rattner, since one would be motivated to incorporate them to provide a greater range in movement as implied from Rattner (Fig. 1).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the device of Krause with individually controlled members of Jarin et al., since one would be motivated to incorporate this in order to coordinate all movements during an examination (Abstract) as implied from Jarin et al.

4. With regards to claim 2, Krause further discloses the supporting device as a serial manipulator (Fig. 2, #16-18).

5. With regards to claim 3, Krause further discloses the supporting device constructed and connected in such a manner that the common holding device can be positioned completely as desired (Fig. 2)

6. With regards to claim 7, Krause further discloses a c-arm (Fig. 2).
7. With regards to claim 11, Krause further discloses the distance between the source and detector as invariable (Fig. 2, #2 and 3).
8. With regards to claim 17, Krause further discloses the source and detector mounted on the common holding device by a displacement device such that the source and detector can be displaced along an axis (Fig. 2, #4 and " β ").
9. With regards to claim 19, Krause further discloses wherein the second end is connected to the room at a connection point such that the rotational hinge permits rotation about an axis extending perpendicularly out from the connection point (Fig. 2, "B").
10. With regards to claim 20, Krause in view of Rattner and Jarin et al. suggests a device as recited above.

However, Krause does not disclose each hinge of the supporting device permitting rotation about a horizontal axis of the hinge.

Rattner teaches each hinge of the supporting device permitting rotation about a horizontal axis of the hinge (Fig. 1, #8 and " α ").

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner and Jarin et al.

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with each hinge permitting rotation about a horizontal axis, since one would be motivated to provide such a modification for more flexibility and movement as implied from Rattner (Fig. 1).

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krause in view of Rattner and Jarin et al. as applied to claim 1 above, and further in view of Hollstein (US Patent 3281598).

Krause in view of Rattner and Jarin et al. suggests a device as recited above.

However, Krause does not seem to specifically disclose a hinge connected to the holding device permitting 360 degree rotation about an axis.

Hollstein teaches a hinge connected to the holding device permitting 360 degree rotation about an axis (Fig. 3 and col. 3, lines 21-32).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner and Jarin et al. with the rotating hinge of Hollstein, since one would be motivated to direct x-rays to all directions as shown by Hollstein (col. 3, lines 25-26) in order to obtain an x-ray image from any direction.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krause in view of Rattner and Jarin et al. as applied to claim 1 above, and further in view of Holmström (US Patent 3,784,837).

Krause in view of Rattner and Jarin et al. suggests a device as recited above.

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However, Rattner does not seem to specifically disclose a holding device composed of at least two holding members for the source and detector.

Holmström discloses a holding device composed of at least two holding members for the source and detector (Fig. 1).

It would have been obvious, to one of ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner and Jarin et al. with the holding device of Holmström, since one would be motivated to have separate holding members to move the x-ray source and detector as freely as possible around the patient as shown by Holmström (col. 1, lines 6-8) and to keep the x-ray source and detector independently controlled for proper alignment (col. 2, lines 1-9) to send x-rays and obtain a signal.

13. Claim 8, 10, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krause in view of Rattner and Jarin et al. as applied to claim 1 above, and further in view of Travanty et al. (US Patent 4,987,583).

14. With regards to claims 8, 10, and 15, Krause in view of Rattner and Jarin et al. suggests a device as recited above.

However, Krause does not seem to specifically disclose means for monitoring distance between an object and the x-ray device with mechanical contact sensors producing a signal.

Travanty et al. teaches means for monitoring distance between an object and the x-ray device (abstract, lines 2-4, and col. 3, lines 50-66) with mechanical contact sensors producing a signal (col. 3, lines 35-40 and 63-66).

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It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner and Jarin et al. with the monitoring means of Travanty et al., since one would be motivated to incorporate this to protect the examined object or patient from being severely hurt by contact with the source or detector as shown by Travanty et al. (col. 1, lines 38-42, and col. 2, lines 11-14).

15. With regards to claim 14, Krause in view of Rattner, Jarin et al., and Travanty et al. suggests a device as recited above.

However, Krause does not seem to specifically disclose braking when the distance between the moving parts and the object falls below a safety threshold.

Travanty et al. teaches braking when the distance between the moving parts and the object falls below a safety threshold (col. 2, lines 11-14).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner, Jarin et al., and Travanty et al. with braking, since one would be motivated to incorporate this to protect the examined object or patient from being severely hurt by contact with the source or detector as shown by Travanty et al. (col. 1, lines 38-42, and col. 2, lines 11-14).

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krause in view of Rattner, Jarin et al., and Travanty et al. as applied to claim 8 above, and further in view of Hinton et al. (US Patent 5485502).

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Krause in view of Rattner, Jarin et al, and Travanty et al. suggests a device as recited above.

However, Krause does not seem to specifically disclose ultrasound monitoring of the object and x-ray device.

Hinton et al. teaches an ultrasound monitoring of the object and x-ray device (Abstract, lines 1-3, col. 1, lines 48-53, and col. 12, lines 53-58).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner, Jarin et al., and Travanty et al. with ultrasonic monitoring of Hinton et al., since one would be motivated to use the monitoring to avoid collision between the various elements of the system as shown by Hinton et al. (col. 2, lines 10-15, and col. 12, lines 47-53) in order to increase safety.

17. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krause in view of Rattner and Jarin et al. as applied to claim 2 above, and further in view of Hinton et al.

Krause in view of Rattner and Jarin et al. suggests a device as recited above.

However, Krause does not seem to specifically disclose software control of the c-arm.

Hinton et al. teaches software control of the c-arm (col. 5, lines 14-19).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner and Jarin et al. with the software control of Hinton et al., since one would be motivated to use a computer and software to provide better control of the motion of a c-arm so as to follow an efficient path

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between two positions and to avoid collision between the various elements of that system as shown by Hinton et al. (col. 2, lines 10-15) in order to save time and increase safety.

18. Claims 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krause in view of Rattner, Jarin et al., Holmström and Schaefer et al. (US Patent 5410584).

19. With regards to claim 13, for purposes of being concise, Krause in view of Rattner, Jarin et al., and Holmström suggests a device as recited above.

However, Krause does not seem to specifically disclose that the distance between the source and detector can change by moving the first and second holding members such that the imaging scale and the size of examination are variable.

Jarin et al. further discloses the distance between the source and detector changing by moving the first and second holding members such that the imaging size of examination is variable (Figs. 3-6). Schaefer et al. teaches the distance change such that the imaging scale is variable (col. 1, lines 65-68).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner, Jarin et al., and Holmström with the changing distance for varying the imaging size, since one would be motivated to incorporate such a change based on the area of interest during examination as implied from Jarin et al. (Figs. 3-6).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner, Jarin et al., and

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Holmström with the changing distance of Schaefer et al., since one would be motivated to incorporate such a change to vary the imaging scale (col. 1, lines 65-68) as shown by Schaefer et al.

20. With regards to claim 21, Krause in view of Rattner, Jarin et al., Holmström, and Schaefer et al. suggests a device as recited above.

However, Krause does not disclose a third holding member connected to the supporting device along with the first and second holding members.

Holmström further teaches a third holding member connected to the supporting device along with the first and second holding members.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner, Jarin et al., Holmström, and Schaefer with a third holding member, since one would be motivated to use this for holding the source and detector as shown by Holmström (Fig. 1).

21. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krause in view of Rattner, Jarin et al., and Travanty et al. as applied to claim 8 above, and further in view of Ninomiya et al. (JP 11-285492).

Krause in view of Rattner, Jarin et al., and Travanty et al. suggests a device as recited above.

However, Krause does not seem to specifically disclose a separate video system to monitor the motion of the c-arm.

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Ninomiya et al. teaches a separate video system to monitor the motion of the c-arm (Abstract, Problem to be Solved).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Krause in view of Rattner, Jarin et al., and Travanty et al. with the separate video system of Ninomiya et al., since one would be motivated to keep track of the movement safely and reliably when they are operated as shown by Ninomiya et al. (Abstract, Problem to be Solved).

22. Claims 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rattner in view of Kresse, Hansen (US Patent 5521957), and Jarin et al.

Rattner discloses an x-ray device with a source (Fig. 1, #2) and detector (Fig. 1, #3) mounted on a common holding device (Fig. 1, #1) connected to a supporting device (Fig. 1, #5) composed of a plurality of hinged, serially interconnected supporting members (Fig. 1, #7) changed in a plane defined by the supporting members (Fig. 1, #1, b) as a 6-axes flexible robot arm (Fig. 1, "b", "α", and "β").

However, Rattner does not seem to specifically disclose plane hinges, supporting members individually controlled, or a holding device connectable to a room.

Kresse teaches hinges (col. 2, lines 61-68, and col. 3, lines 1-2) and a holding device connectable to a room (Fig. 1, #12). Hansen teaches plane hinges (Fig. 1, #31 and 32). Jarin et al. teaches supporting members individually controlled (Fig. 1 and Abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the device of Rattner with the hinges to move the holding device of

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Kresse, since one would be motivated to use the hinges to create free accessibility or positioning of the c-arm to the patient when operating the x-ray device as implied from Kresse (col. 1, lines 60-68, and Figure).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to the device of Rattner with the holding device connectable to a room of Kresse, since one would be motivated to use these connections to hold the device in place as implied from Kresse (Fig. 1).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the device of Rattner with the plane hinges of Hansen, since one would be motivated to use the hinges to allow pivoting and movement of components of the imager as implied from Hansen (Fig. 1) to take images of different areas.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the device of Rattner with supporting members individually controlled of Jarin et al., since one would be motivated to have individually controlled members in order to coordinate all movements during an examination (Abstract) as implied from Jarin et al.

Also note that a recitation, such as "members which may be individually controlled", with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Response to Arguments

23. Applicant's arguments with respect to claims 1-3, 5-17, and 19-21 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments filed 11/17/03 have also been fully considered but they are not persuasive.

With regards to Rattner, Rattner still applies for its disclosure of an x-ray device.

With regards to Kresse, Kresse is not cited for its teaching of a common holding device. That is already known in the art as shown by other references cited. Kresse is cited for its hinges, which are considered art-recognized equivalents of the hinges of the other references cited since they all are components that can move one component in relationship with another. It would have been within routine skill in the art to substitute one type of hinge for another.

With regards to Hansen, Hansen still applies for its hinges and its obviousness in combination.

With regards to Jarin et al., Jarin et al. still applies for its teaching of individually controlled members and its obviousness in combination.

With regards to claim 18, Rattner does disclose a 6-axes arm (Fig. 1, "b", "α", and "β"). Although the references cited may fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (a 6-axes arm as depicted in Fig. 4a) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

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Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk



DAVID V. BRUCE
PRIMARY EXAMINER